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Memorandum

Date: June 5, 2002
To: McCullough Research Clients
From: Robert McCullough
Subject: Congestion Manipulation in ISO California

Executive Summary

On May 6, 2002 FERC released three memos that gave an overview of a family of schemes designed to take advantage of the California market. While some of these schemes were simply arbitrage, others involved falsifying filings at the ISO and collecting congestion fees from imaginary transactions. Analysis of detailed trading materials, including instructions on the entry of these transactions into Enron's computers and daily transaction logs, shows that Enron had developed a wide variety of methods for creating the illusion of transactions that could alleviate transmission congestion at the California ISO.

Stripped of their complexities, these schemes are simply a modern version of check kiting – a way of collecting money from unsuspecting victims by creating a cycle of transactions without underlying economic or engineering substance.

Enron used a variety of counterparties in these schemes. PGE is mentioned repeatedly. Washington Water Power (Avista) and PacifiCorp are also present as participants. California transmission outside of the knowledge of the California ISO is contributed by Redding, NCPA, and LADWP

Evidence from other sources leads to the suspicion that such tools may have been used to create congestion as much as they were used to alleviate it. If so, this will go a long way to explain

inconsistencies in the data from January 2001 that shows that while the California ISO believed that it was shipping energy north, the Bonneville Power Administration shows that net energy flows were going south. The California ISO needs to be encouraged to make transmission schedules, congestion payments, and actual flows from January 2001 public so that the question whether these schemes may have caused the blackouts during this period can be investigated.

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Introduction

In the winter of 2000/2001 the California ISO ordered blackouts 6 times in Northern California. A central facet of the ISO's operational problems was congestion of transmission of Path 15 between Los Angeles and San Francisco caused, in part, by the low level of generation from power plants in Northern California. Since two paths exist into Northern California – Path 15 and the California Oregon Intertie – it is logical that the ISO also believed it faced congestion along the California

Oregon Intertie.¹

Enron traders in Oregon and Houston designed a number of schemes to allow them to eliminate congestion in California without the use of real kilowatt-hours. These schemes were designed to fool the California ISO into paying Enron and its business partners for the alleviation of congestion. The phrase, “Deathstar,” was one of the ten schemes cited in the Christian Yoder and Stephen Hall (Yoder/Hall) memo dated December 6, 2000. The schemes reviewed in this report are versions of the basic Deathstar model.

We have reviewed a number of additional materials that have come to light in the investigation of the California crisis by California State Senator Dunn’s office. Unlike the Yoder/Hall memos and the meeting notes transcribed by Enron attorney Mary Hain, these are actual operational summaries of imaginary congestion alleviation schemes. These documents include specific details down to the paths used, the contracts utilized for transmission, and the entries made in the computer scheduling programs.²

One simple conclusion springs from these documents: the ISO congestion calculations were easily and repeatedly manipulated by a variety of market players. Since the ISO has still not released operating data for the winter of 2000/2001, we can’t yet say how much money was earned in these schemes. We also can’t say whether these schemes caused the operational problems the led to the blackouts. Evidence exists, however, outside of the control of the ISO, that the apparent congestion into Northern California may not have really existed and that the resulting blackouts may have been unnecessary.

On Wednesday, I have been invited to testify before Senator Dunn’s committee. At that time I plan to ask that the ISO be required to release the operational data – transmission schedules, bids, and congestion fee revenues – for January 2001, so we can check whether these imaginary congestion schemes contributed to the blackouts.

Enron’s Continuing Role In Imaginary Congestion

During the on-peak hours of May 25, 1999, Enron offered to sell 2,900 megawatts through the California Power Exchange over the Silver Peak route from Nevada to Southern California. Silver Peak’s capacity was 15 megawatts. This massive amount of power – sufficient to supply the needs of cities like Portland, Oregon or Sacramento, California – triggered the ISO’s congestion procedures, raising prices in both Northern and Southern California. Enron’s defense was that “it acted to gain

¹California and Oregon are connected by two major transmission projects – the DC from L.A. to The Dalles, Oregon and the AC from John Day to Northern California. Within Northern California, the AC splits into two parts – the COI owned by the investor owned utilities and the COTP owned by California’s publicly owned utilities. The COTP is not scheduled by the California ISO. This appears to be a central feature of the schemes Enron designed to manipulate congestion in California. See the diagram on page 11.

²Enron’s traders followed the tradition of attaching catchy names to their schemes. The actual documents show how Deatstar, Black Widow, and Red Congo were implemented. The documents include a recipe for the specific actions traders and schedulers needed to take in order to manipulate the California ISO.

more knowledge of the depth of the adjustment bid stack and to publicize the flaw that excluded certain bidders from the adjustment bid process.”³ The California PX investigated the problem and accepted a settlement from Enron that contained a \$25,000 payment and agreed to not “engage in substantially the same conduct.”⁴ This settlement was signed by Greg Whalley, Enron Power Marketing’s President and Chief Operating Officer. Mr. Whalley is now the Managing Director of the UBS Warburg’s energy trading unit purchased from Enron this year.

The ISO apparently did not investigate this incident.

In February of this year, David Fabian, a former employee of Enron’s trading unit wrote to Senator Boxer alleging that

(1) There is a single connection between northern and southern California's power grids. I heard that Enron traders purposely overlooked that line, then caused others to need it. Next, by California's free-market rules, Enron was allowed to price-gouge at will.⁵

Mr. Fabian’s warning goes further than the materials we have in hand, but seem a logical corollary to them, given the data we have for January 2001.

We now know that Greg Whalley’s commitment to avoid the same conduct was in bad faith. Mr. Whalley’s settlement was made the same month as the design for Deathstar was being finalized by Mr. Whalley’s staff. The timing of these materials, including the scheduling instructions for Deathstar makes it clear that Mr. Whalley’s commitment hinged on his interpretation of “substantially.” Perhaps his interpretation simply meant that Enron had gained enough understanding of the mechanics since Silver Peak to avoid discovery at the ISO and the PX.⁶

Deathstar, Black Widow, Big Foot, Cong Catcher, Forney’s Perpetual Loop, and Red Congo

Enron’s traders developed a number of finely tuned schemes that manipulated the California ISO’s computer systems in order to receive congestion fees. The schemes appear to be simple commercial fraud since, by design, no actual generation was ever envisaged as running to support the schedules filed with the California ISO. One scheme in particular, the Forney Perpetual Loop, is designed to create an illusion of power flowing in a circle from John Day in Oregon through Mead in Nevada, through the critical congested pathways in California, without any input of energy whatsoever.

³Report on the Compliance Unit Investigation of Market Events for March 25, 1999, November 15, 1999, page 10.

⁴Offer of Settlement, April 27, 2000, page 2. Signed by Greg Whalley.

⁵Letter from David Fabian to Senator Boxer, February 13, 2002, page 1.

⁶The one sided nature of the settlement between Enron and the California Power Exchange becomes even more apparent with the notation at the bottom of the PX documents that “some of these were not produced to the A.G.”

Each of these schemes is a subset of the generic scheme, Deathstar, where an imaginary schedule is filed with the ISO that elicits payments for the alleviation of congestion. Since the ISO is rules-based rather than results-based, no actual generation is required for the right to file schedules. The only issues within the ISO pertain to whether the schedules met the rules – even if they failed to meet any engineering logic.

Each scheme is based on the fact that schedules can be broken before energy flows take place. This allowed Enron to create an imaginary cycle of trades through the ISO. A common form of financial fraud is known as “check kiting.” In this fraud, a con man writes checks between a cycle of bank accounts. The frequent deposits and withdrawals lull the bank into believing that real transactions are taking place. Eventually, the con man withdraws all the deposits at once, leaving the bank to discover that recently deposited checks will bounce since the accounts they were written on have been closed.

In this case, Enron knew that the ISO would trigger the adjustment bids and cancel the proposed transaction. Even if the transaction wasn’t ended by the ISO, the schemes had enough counterparties that the ISO would not know that no energy actually flowed.

It is critical to understand that if Enron, or any market player, can alleviate congestion south to north, they can cause congestion to occur with identical methods simply by reversing the direction of the imaginary schedules. The ability to cause – or alleviate – congestion allows a form of arbitrage where it is possible to cause the ISO to declare an emergency because congestion blocks access to loads when the incentives are right.

Schedules and Flows

While most customers of electric utilities (and not a few policy makers) believe that electricity is like natural gas – a commodity that can be transported and stored by the direction of the utilities – the reality is much different. Electricity moves at the speed of light. We have little ability to direct the flows of electricity once it is generated. Our approach to this unique operating problem is to control the generation of electricity, and in a few rare cases, the consumption, in order to create a pattern of generation that induces the electric flows through the transmission system. In order to get electricity to flow south over the California Oregon Intertie, we increase generation above loads in Oregon and Washington and allow generation to fall below loads in California. Since this is vastly more complex than simply trucking products where they are needed, it is critical to plan the operation in advance.

Industry practice has been to preschedule plant operations and transmission use. The schedules are constructed a week in advance. As the date of delivery approaches, the schedules are updated on a daily basis, and eventually on an hourly basis. During the hour of consumption, adjustments to make the schedules match reality – usually caused by changes in weather or equipment failure – are made by the system operators in “real time.”

A central facet of the California ISO was the attempt to automate as much of this process as possible. Generators and consumers file schedules a day ahead. The ISO compares these schedules with transmission constraints and develops a feasible schedule of generation that matches the capacity of

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the transmission lines between the generating plants and the ultimate consumer.

A central facet of the adjustment is the calculation of congestion fees – payments and surcharges calculated to induce generators to reduce their use of transmission lines that would otherwise carry flows greater than their rated capacity. Congestion fees are a product of schedules – no actual electricity flows until real time. In theory, the ISO will have adjusted the schedules to transmission constraints hours before actual operations commence.

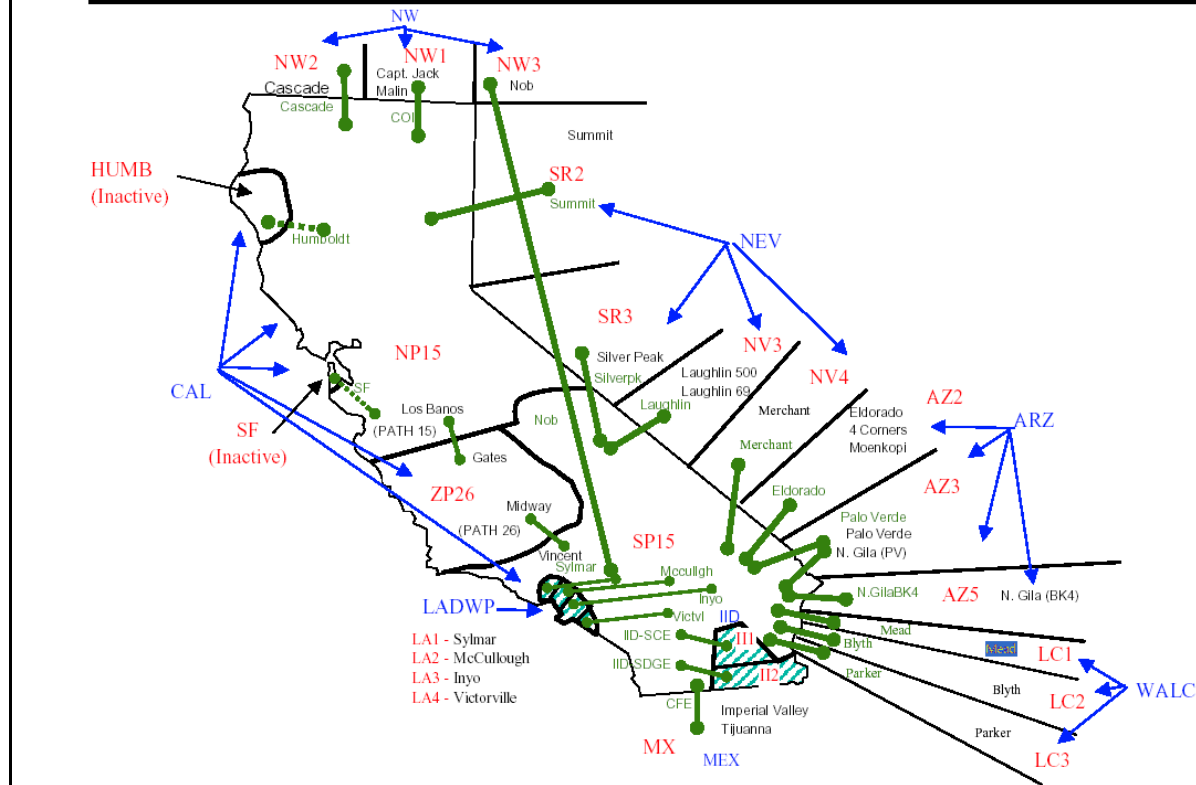
Flows are instantaneous. We measure flows after the fact. If the system works, no congestion i.e., use of transmission lines over their rated capacities – ever occurs in the real world. Obviously, in the very rare case when a mistake is made, lines overheat and equipment might fail. This could lead to wide spread blackouts since failure can easily be catastrophic. If the system looks like it will be overloading the transmission system, operators will order temporary rotating blackouts of limited size to avoid the possibility of catastrophic failure. This, apparently, is what occurred in the winter of 2000/2001.

The California ISO's use of congestion fees to manage schedules is entirely a theoretical operation. The ISO's CONG computer program calculates the degree of congestion and derives the appropriate level of payment to induce generators to adjust their proposed generation schedule to the needs of the transmission system. After CONG has been run and the adjustments to schedules calculated, the operators can enter "real time" knowing that the basic operation of the system is consistent with the physical constraints of the transmission lines.

ISO terminology is always a challenge. The following diagram shows both the ISO's basic areas and the transmission routes that connect them. The specific locations that are central to the Deathstar schemes are indicated both in ISO terminology and in more traditional industry geographic names.

Network Model

Effective May, 2000



The schedules of importance to Deathstar and its related schemes are those that flow over the COI in the north, the flows between San Francisco and Los Angeles (NP-15 and SP-15) and lines to the east which allow imports from the Desert Southwest – Silver Peak, Mead, and Palo Verde.

Deathstar

Deathstar is a generic name for a family of schemes that are designed to capture ISO congestion payments through imaginary transactions. The name first came to general attention through the December 6, 2000 memo by Christian Yoder and Stephen Hall. Their description on pages 4 and 5 is hardly detailed. They describe a scheme to ship energy between COB and “Lake Mead.” As with other details in the Yoder/Hall memo, the description appears to be hasty and superficial.

The detailed materials authored by Michael Driscoll on April 5, 2000 describe how the hints in the Yoder/Hall memorandum actually worked. The following operating details are from his email:

Project Deathstar has been successfully implemented to capture congestion relief across paths 26, 15 & COI .

We input the deals as follows :

1 EPMICAL POOL MEAD230 / MALIN

2. ONE DEAL TICKET, A BUY/RESALE WITH WASHINGTON WP SELLING AT MALIN, REPURCHASING AT PGE SYSTEM, (PAYING WWP \$1 DIFFERENTIAL)
3. SELL INDEX FWD TO PGE AT PGE SYSTEM. INPUT AT DOW JONES MID C INDEX.
4. BUY INDEX FWD FROM PGE AT JOHN DAY AT DOW JONES MID C INDEX PLUS .90
5. USE EXISTING PGE CONTRACT #146517 FOR TRANSMISSION FROM JD/MALIN
6. USE EXISTING LADWP TRANSMISSION #292672 FROM MALIN>MEAD230

Everything will link up, with the buy from PGE(JD) on top, all the trans and buy/resells in the middle, and the sell to PGE(system) at the end⁷

These are instructions on how to enter a Deathstar transaction into Enron's scheduling computer program. Much of the scheduler's jargon may seem bizarre to those new to the industry. Much of the shorthand involves instructions on the entry of the transaction into Enpower (Enron's California transaction software) or CAPS (software to submit schedules to the ISO.)

The six steps translated into normal English are as follows:

1. File a schedule over ISO transmission paths from Mead to the California Oregon Border.⁸
2. Washington Water Power (Avista) sells at COB and repurchases at Portland.
- 3/4. Enron buys and sells based on Dow Jones Mid C Index.
5. PGE transfers the power to John Day.
6. Transfer the power back to Mead over LADWP existing transmission rights on the ISO system.

This transaction will increase the ISO's feeling that energy is being exported out of California to the Pacific Northwest.⁹ As designed, this will "capture" congestion fees at Path 15, Path 26, and the California Oregon Intertie. For this to work, power flows must be generally southward – a standard situation in May.

Perpetual Loop

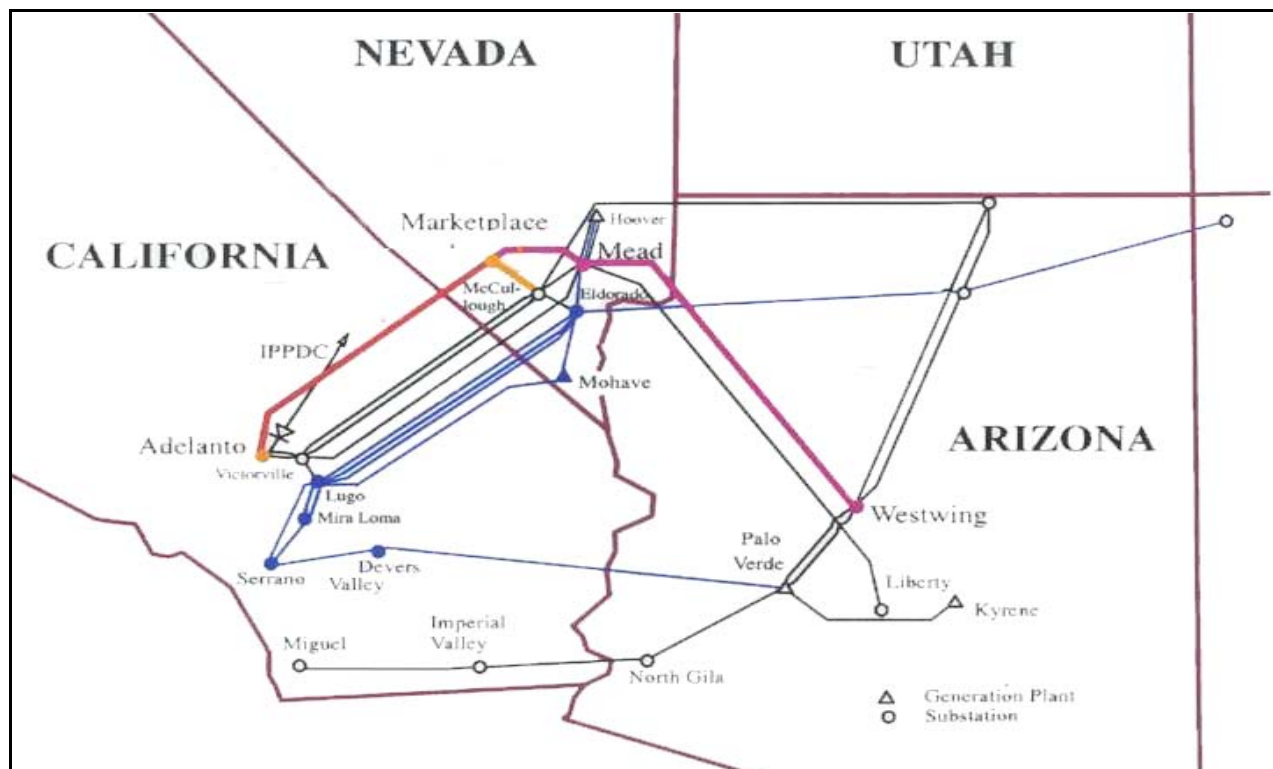
John M. Forney was an active trader at Enron with memos and emails covering a variety of Deathstar and Fat Boy schemes. He now works for UBS Warburg in Houston.

⁷The FINAL PROCEDURES FOR DEATH STAR, disregard the other 2 emails, Michael Driscoll, May 5, 2000.

⁸Malin is the physical location of the substation that connects PGE and BPA's 500 kV lines with California.. Mead (not "Lake Mead") is a market hub in Nevada.

⁹An interesting facet to each of these schemes is that Enron was certain that the ISO would not connect the dots in these transactions. This is all the more surprising since the ISO schedules both sides of the transaction. Only the portions at Mead and within Oregon are outside of the ISO's scheduling.

The Perpetual Loop is similar to the Driscoll's Deathstar scheme summarized above. The Forney Perpetual Loop reduces Washington Water Power's to a simple buy/sell at Malin. Washington Water Power's role at Malin seems to lack substance. There are two reasons why they may have been included in the design: First, they might have been present to avoid the attentions of the Oregon Public Utility Commission, since they would stand between Enron and PGE. Second, a key feature of the Forney Perpetual Loop is the export of non-firm power from California. Since Mr. Forney has added the legend "No MW's flow, just call in schedules" to the upper left hand corner of his memo, the role of Water Power might be to "firm" the non-firm export.



The southern terminal of the Perpetual Loop is Palo Verde. Both Mead and Palo Verde are market hubs, so this shift would seem to be tactical, rather than strategic

Boiled down to trading instructions:

1. Export non-firm to Malin
2. Have WWP buy/sell at Malin
3. PGE transaction from Malin to John Day
4. Enron transmission to Malin
5. LADWP to Palo Verde
6. Import firm from Palo Verde to California

This was clearly a plan for hourly trades, since it closes with the instruction to call WWP and PGE Congestion Manipulation in ISO California Page 9

every hour to advise them of the transaction.

Black Widow

The description of Black Widow is relatively sketchy. On December 24, 1999, Lester Rawlinson emailed his colleagues in Portland and Houston the steps necessary to protect the California Book against transactions that “tend to lose money on the energy . . .”¹⁰

We have reviewed daily logs for five days in 2000: August 5, October 2, October 30, November 11, and November 22. Many of the transactions – far more than one would expect – show a loss. On October 2, for example, Enron lost money on 10 of 24 hourly transactions

Red Congo

Red Congo is another creation of John Forney. Red Congo has the following steps:

1. SC trade with WAMP on behalf of Redding . Don’t adjust load.
2. NF export with sale to PACW at \$20.
3. Redding buys energy from PACW at COB at \$21
4. Redding uses their ETC (existing transmission capacity) to take energy from Cob to Tracy, where we traditionally transact via SC trade.¹¹

As above, Mr. Forney’s notes can be translated as schedule trade through WAPA. Redding’s transactions are with PacifiCorp (west) at Malin and the resulting energy is “delivered” to Tracy. The map on the next page shows the geography of this arrangement.

This virtual loop is similar in concept to the descriptions of Deathstar and the Perpetual Loop. Unlike these, the loop only provides an opportunity to relieve congestion on the CACI.

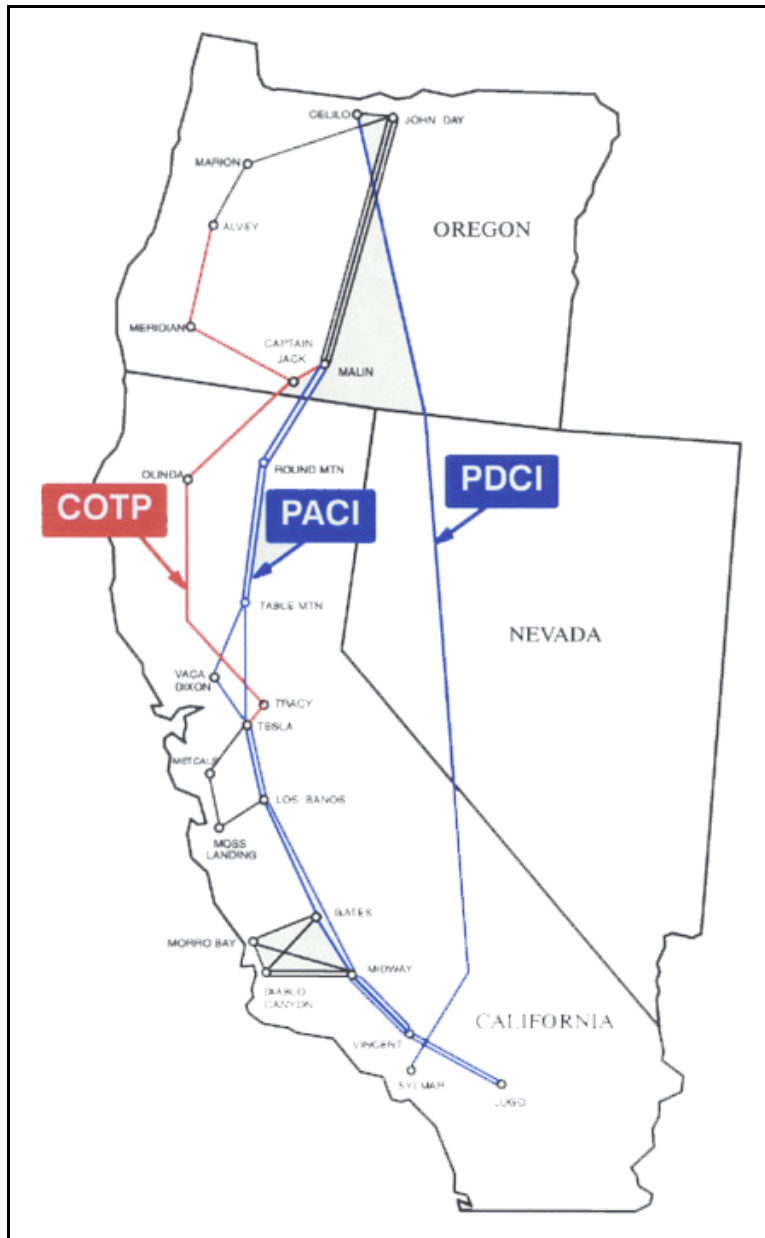
Red Congo is unusual at this point because PacifiCorp has provided corroboration in its affidavit to FERC concerning Enron’s trading schemes.¹²

¹⁰Black Widow Enpower, December 12, 1999.

¹¹Undated email from John M. Forney.

¹²87. Company personnel recall that the City of Redding asked PacifiCorp in or about April 2000 if it would assist it from time to time to move energy over the COTP in northern California that connects at the Captain Jack substation. Since that proposal was for a common industry transaction, PacifiCorp agreed to engage in the transaction for a small fee that was subject to change by PacifiCorp. Company personnel do not recall being aware in advance that Enron would be part of such transactions, or that PacifiCorp would be part of what is described in the Enron Email as a "virtual loop." Nor do they recall being "on board" with a transaction that was designed to benefit Enron.

88. The Company has located two transactions that appear to have been made with the City of Redding according to the agreement described above. Company personnel recall that the City of Redding appears to have discontinued use of PacifiCorp's service when PacifiCorp slightly



From Pacific's comments, Enron and Redding approached other third parties to provide support for this scheme as well.

Cong Catcher

The information on Cong Catcher is based on a hand written diagram showing the trading relationships between NCPA, PGE, PG&E, and NCPA. The basic premise appears to use PGE to make transactions across Path 15 and then to use NCPA transmission rights to return the energy.

As with Red Congo, this is a localized scheme designed to capture congestion payments over a single path.

A related, but slightly different, concept is contained in an NCPA/Enron Transmission Management Proposal dated March 31, 2000.¹³ This concept would appear to allow a third party to "manage" NCPA's rights from COB through NP-15 and ZP-26.

NCPA's Proposal is a troubling document since it would appear to open the possibility that NCPA was aggressively marketing its services in

avoiding ISO and PX scrutiny. The document provides for a split of the earnings from the

increased its fee as a commercial matter. Attached hereto as Exhibit 8A are responsive emails. Attached hereto as Exhibit 8B are copies of the long-term power purchase agreements between PacifiCorp and City of Redding. Attached hereto as Exhibit 8C are trading logs dated May 6, 2000 and June 22, 2000, involving transactions with the City of Redding.

Response of PacifiCorp to the Commission's Data Request, May 8, 2002, page 23.

¹³Transmission Management Proposal between Northern California Power Agency (NCPA) and William Energy Marketing & Trading Co., March 31, 2000.

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“management” of NCPA’s transmission rights.

Big Foot

Again, information on Big Foot is sketchy. In an email from Lester Rawson, Big Foot appears to include Washington Water Power energy bid into the ISO real time markets. The payment to WWP is a relatively small \$3.00 per MWh, making it appear that this should be a facilitation rather than an actual energy transaction.

Enron’s Counterparties

The term “counterparty” is meant to replace the term “customer or supplier.” In the context of Deathstar type schemes, each participant is both a customer and supplier for the same imaginary energy. Five firms figure significantly in the Enron trading documents: PGE, PacifiCorp, Redding, LADWP, and Avista. Avista, following industry practice, is referred to as Washington Water Power.

PGE has admitted that it has found some suspicious transactions with Enron in last week’s affidavit to FERC. PGE has not yet released the affidavit or its supporting documentation. Enron’s affiliate transactions with PGE are governed by FERC Order ER98-3671 and ER98-1643. In practice, such rules were easily circumvented by using transactions with third parties.

PGE shows up in three major areas in the materials. First, PGE is a critical part of the Forney Perpetual Loop. In this scheme, PGE is used as a conduit to take power from the California Oregon Border to PGE’s service territory. Since the imaginary energy is first transferred through Washington Water Power, the transactions would not need to be reported under Orders ER98-3671 and ER98-1643. Moreover, Washington Water Power’s presence in the transaction would avoid scrutiny by the Oregon Public Utility Commission. Second, PGE shows up as a very central player in the Cong Catcher. Third, PGE’s role in Driscoll’s Deathstar instructions appears similar to their role in the Perpetual Loop.

In addition, the costs from use of PGE transmission are cited in a memo concerning Big Foot, but are not clearly related to the Big Foot transaction. Use of PGE transmission is cited in Forney’s February 17, 2000 Real Time Opportunities email.

PacifiCorp is mentioned in the Red Congo scheme. Perhaps more importantly, PacifiCorp notes that it was approached by a number of counterparties to provide what may have been similar services. These companies include Aquila, Sempra, and Williams.¹⁴ The presence of Williams on this list is

¹⁴82. In a limited number of cases, PacifiCorp entered into a buy and sell transaction with a single counterparty at a single interface for a small fee. PacifiCorp was not the entity initiating the ricochet; rather, it acted as the intermediary for these transactions. Based on a search of the trading logs from July 2000 through November 2000, there were approximately 767 transactions (for a total of 40,376 MWhs) identified in which PacifiCorp acted as an intermediary for a purchase and sale with a third party and earned a small fee. These trading logs are attached hereto as Exhibit 4. It should be noted that in the Requested Period the number of total transactions

consistent with the terms and conditions sheet dated March 31, 2000 which appears to indicate that NCPA simply recycled an existing agreement with Williams to join Cong Catcher.

Washington Water Power (Avista) is mentioned as a common counterparty in these schemes. While it is possible that Washington Water Power provided control area and/or firming services to Enron at Malin, it is also clear that their presence may have reduced the visibility of these transactions to Oregon regulators. Portland General Electric does not list affiliate transactions on its web site for 2000, so the data available from daily trading summaries cannot be compared to their affiliate trading summaries.

LADWP, NCPA, and Redding all figure prominently in these schemes. It is not clear whether these agencies understood the use of their transmission rights was as part of a fraudulent “virtual loop.” The NCPA proposal with Williams that was shifted to Enron simply by crossing out the places where Williams is named an entering Enron would make it appear that NCPA knew that they were selling a service that might be used to game the ISO.

El Paso and Colorado Springs have a role as suppliers of energy into this process. Both, by distance and size, would seem to be minor actors, but it is difficult to judge relative importance from the materials in hand. Of the two, El Paso appears to have had a more important role.

All told, Enron’s schemes included a number of other parties, selected for their transmission access, location, and the ability to obscure regulatory review.

completed by PacifiCorp in the WSCC was approximately 45,000.

84. The counterparties in these transactions were Aquila Inc., Enron Power Marketing Inc. ("EPMI"), Semptra, and Williams Energy Services Company. The transactions initially appeared no different from PacifiCorp's buy-sell transactions which use PacifiCorp's transmission system. However, as the number of these transactions increased, the fact that they were limited to a single point of delivery became increasingly apparent, and there was a growing concern that the transactions might have elements of megawatt laundering .

The Events of January 17, 2001

As with so much about ISO operations, the actual events in the winter of 2000/2001 continue to be shrouded in mystery. While the ISO's FERC tariff should have led the agency to release operating data for the period, most of the data is still secret or subject to confidentiality restrictions.¹⁵ Some of the data has been lost or was never systematically collected.¹⁶

Industry opinion outside of the ISO is that much of the secrecy is simply designed to protect the ISO from accusations of operator error. The problem is that the ISO's unwillingness to release even simple historical details also protects the traders who may have contributed to the crisis or even caused some of the operational problems.

A central facet of the problems in January 2001 was the inability of the California ISO to bring energy into Northern California. The blackouts in Northern California were directly linked to congestion on Path 15. The facts we do know about the period directly contradict many of the ISO's statements about transmission constraints during this period.

On January 17, 2001, the ISO declared a Stage 3 Emergency at 1:45 A.M. ISO reporting on January 17th is sketchy at best. The ISO's report to the North American Electric Reliability Council states:

1/17/01:

Prescheduled interchange imports are much less on the 17th than the 16th.

From approximately 0515 until 2200, all non firm loads were requested to be interrupted. The estimated total of these non firm loads is 1500 MW.

Pump load is curtailed as available. CDWRs water operations have been severely impacted as a result of the many requests for curtailment.

Generation outages (forced and planned) are approximately 10,000 MW.

From 1140 until 1345, the ISO requested PG&E interrupt 500 MW of firm load. Path 15 limits were being exceeded due to hydro generation in northern California that must be backed due to low water levels. During the reduction of those hydro facilities, a thermal plant in central California tripped which in turn created an overload on Path 15.¹⁷

The ISO's notification concerning the emergency to the Secretary of Energy was also laconic:

(1) Continuing Transmission Constraint on Path 15: Due to the locational dispersion of resources in California, the CAISO must transmit power from generation capacity in Southern California to Northern California to meet Northern California load. Path 15 has been and will continue to be fully loaded and therefore, no additional power can be transmitted North (where there continues to be a

¹⁵The ISO continues to insist on confidentiality restrictions on operations and bidding data even though the emergencies of the winter of 2000/2001 took place eighteen months ago – far longer than the period specified in their regulations.

¹⁶Actual flows on the ISO's system before the fall of 2001 have apparently been lost. Individual power plant outage data is characterized by the ISO as unreliable.

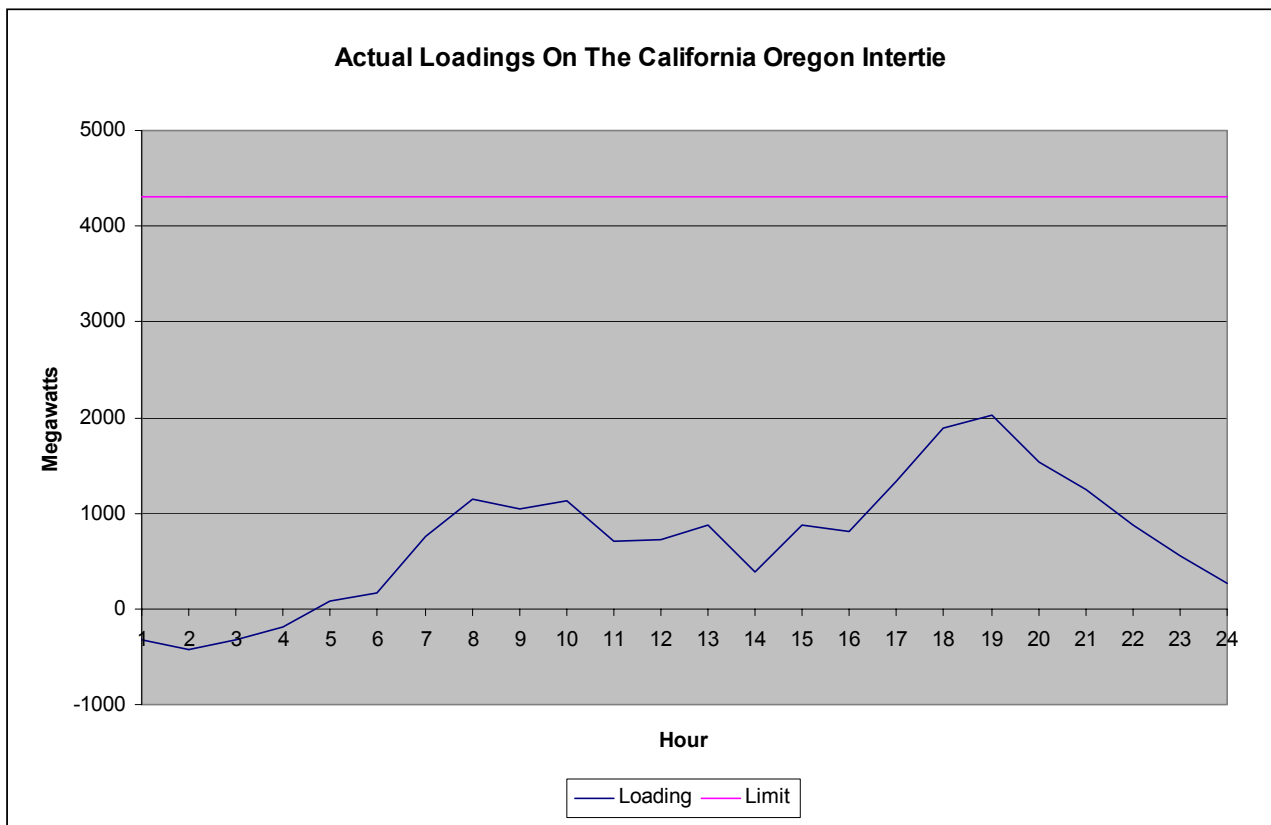
¹⁷NERC Energy Emergency Alert 3 Report, January 17-20, 2001.

deficiency).

Redaction -- market sensitive information¹⁸

Given the materials summarized above, the questions of whether the congestion cited by the ISO actually existed needs to be addressed. Unfortunately, we have no independent data on Path 15. We do have authoritative data on the loads into Northern California along the California Oregon Intertie.

The Bonneville Power Administration provides loadings on both the CDCI and CACI on their Oasis web site.



The 17th, characteristic of the entire period, did not see serious loadings on the CACI. The transfer limit for the period was 4,300 megawatts. The highest utilization was 2,028 megawatts – less than 50%. Actual loadings from the California ISO are no longer available. The ISO does have the day ahead and hour ahead schedules for the same period, however. These show a very different story.

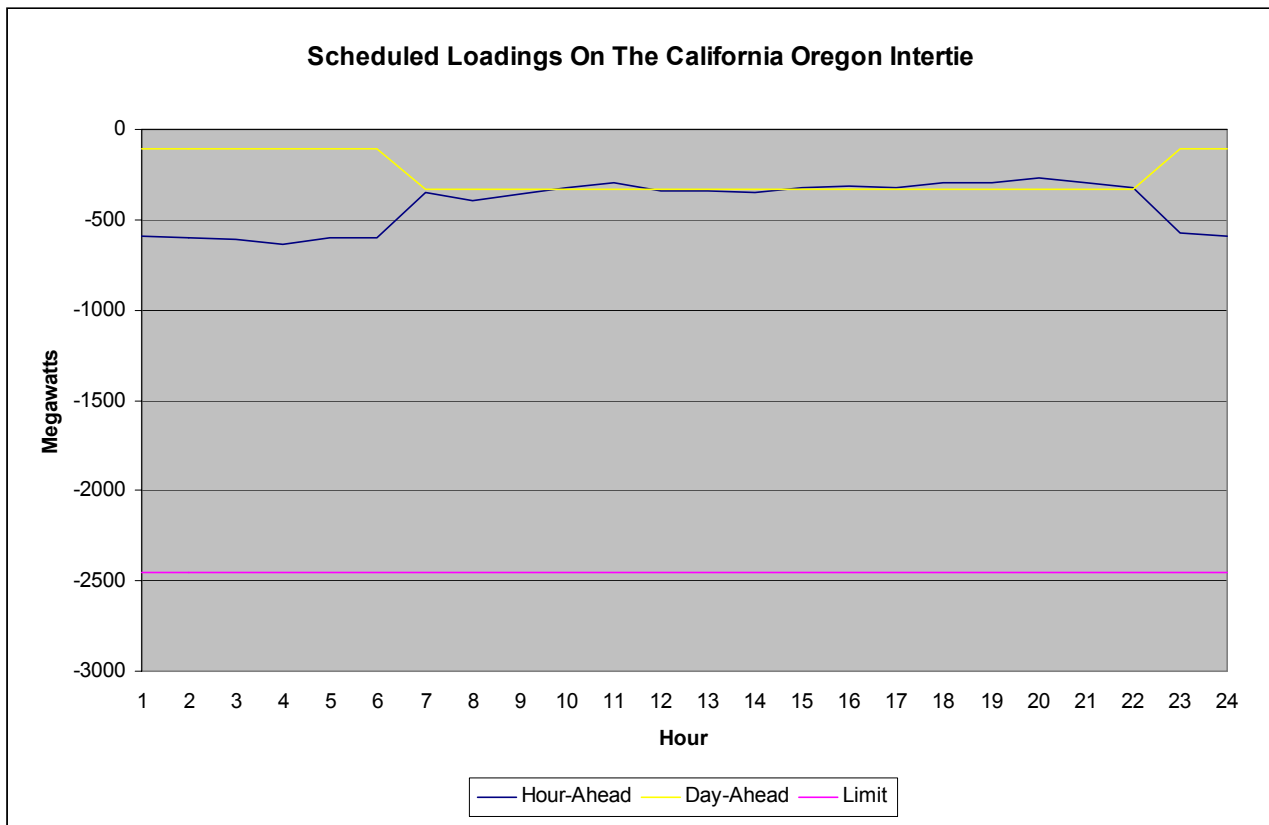
In every hour of the 17th, data from the ISO shows that the line carried energy from Northern California to Oregon. Although ISO reports show that congestion on the line was total for the day

¹⁸CAISO NOTIFICATION: DOE Certification for Operating Date January 17, 2001, Analysis of Load Forecast, Resource Availability Forecast, and Transmission System Conditions that Call for Certification, page 2. Congestion Manipulation in ISO California Page 15

ahead schedules, actual loadings were just a fraction of total available capacity.

How can we explain this apparent contradiction?

As discussed above, while the ISO dispatches all of the CACI, it actually schedules only the two thirds share owned by the Investor Owned Utilities. The remaining one third share, corresponding to the COTP, belongs to California municipal utilities. Logically, this would mean that the flows scheduled south on the COTP overwhelmed the flows scheduled north on the COI, resulting in the ISO believing that exports were being made to Oregon while the reality is that substantial imports were actually taking place.



The mystery is deeper than that, however. The California municipals can only schedule one third of 4,300 megawatts south – 1,433 megawatts. If the schedules north were approximately 300 megawatts at 7:00 P.M., the total capacity of the line available to the municipals for scheduling south could not yield a net transfer of 2,028 megawatts during this hour. At most, the municipals could have transferred 1,433 unless they used capacity belonging to the Investor Owned Utilities.

Even stranger, neither the actual data reported by the Bonneville Power Administration, nor the schedule data reported by the ISO explains why the ISO told both NERC and the Secretary of Energy that it was having difficulties transferring energy to Northern California. While transferring energy north to Oregon on the D.C. line and then south on the AC line is not efficient, it was clearly feasible.

Only two alternatives exist. First, the ISO made an operating error during a prolonged period when they did not recognize the possibility to use the CDCI and CACI to avoid Path 15 problems. Second, phantom congestion caused by gaming on the California ISO lines made it impossible for them to schedule energy where it was required.

Clearly, the possibility of first alternative is very remote. From the documents summarized above, the second alternative is quite likely. In neither case were the blackouts in Northern California apparently required on January 17th.

Conclusions

1. Enron's traders created a number of schemes designed to create imaginary schedules eligible for ISO congestion payments.
2. These schemes, both in their scale and in their number, indicate that traders had the ability to distort the ISO's transmission operations throughout the State of California.
3. These schemes included numerous counterparties. PGE was a primary player. Other Pacific Northwest utilities were involved. California utilities such as LADWP and NCPA appear to have played an important role.
4. The ability of the protagonists to manipulate the ISO system opens the question whether critical operations during January 2001 suffered from their manipulations. Data inconsistencies between the ISO and the Bonneville Power Administration seem to support this hypothesis.
5. It is critical for data on actual flows, schedules, and payments to be released so that the scale of the problem can be investigated. Continued secrecy will tend to protect the perpetrators of these schemes over the interest of consumers.